

## **SAFETY SHEILD WINDOW INSERT**

### **BACKGROUND OF THE INVENTION**

The present invention is directed to the field of automotive safety equipment. More particularly, the present invention is directed to a defeasible shield window insert that may be inserted and retained within an opening for an automotive window.

Automobile manufacturers are increasingly incorporating safety features into the design of automobiles, however, with respect to the windows on the automobile, the industry standard remains to simply use a glass window retracting into the door frame. One safety feature that has been incorporated has been the use of a locking device activated by the driver which can be used to prevent passenger windows from being opened. This device is primarily intended for limiting the ability of small children to open a passenger door window.

With respect to a first aspect of the present invention, there are few, if any, devices available to restrain a child or family pet, such as a dog or cat, from exiting through an open window, other than a cage or container. For the safety and comfort of the child or pet, it is clearly beneficial to allow a constant flow of fresh air into the vehicle. Currently, the only choice for parents, or pet owners, who wish to bring safety and comfort to their children and or pets; not confining them physically, or have concern about the amount of air flow, is to limit how far down the window is retracted; thus preventing the child or pet from exiting the window.

With respect to a second aspect of the invention, there has been increasing concern about, and awareness of, the vulnerability of a vehicular occupant to bodily injury or attack as a result of the relative ease of access to the occupant of a vehicle via the glass window of the door. Glass windows may easily be broken and provide little, if any, resistance to assault with a gun.

Currently, the only alternative for increasing the safety of a vehicle occupant with respect to the glass window is to have a custom modification of the vehicle done to install a 'so called

“bullet-proof” window. Such custom modifications are both expensive and relatively uncommon, requiring extensive modifications to the door assembly. Accordingly, the installation of bullet proof windows in vehicles is not commonplace.

A first effort to address the foregoing issues was detailed in applicant’s U. S. Patent No. 5,470,542 issued November 5, 1996, herein incorporated by reference. All of the claims of the No. 5,470,542 patent were based on a window insert that occupied the area normally occupied by the original window. The window insert fitted into the upper channel of the window frame and was retained in its place by the original window fitting into a groove running along the bottom of the insert.

The No. 5,470,542 patent’s window insert retention system, and because the window insert took the place of the original window, greatly limited the use of the invention. The window could not be rolled up when the insert was in place, and the driver was compelled to stop and remove the insert during inclement weather, or to reduce the flow of air through the insert. The bullet proof window insert needs extensive and complicated weather proofing to be used in any inclement weather. Accordingly, it would be beneficial to have an alternative window insert that allows the car’s windows to be rolled up and down while the insert remains in place.

## SUMMARY OF THE INVENTION

The invention is directed to an insert formed from a clear or translucent material, adapted to be inset into, and retained by the window opening within conventional automobiles. With the first aspect of the invention the window insert was intended for use by parents and pet owners, and included a plurality of openings allowing venting of air for the benefit of children and pets, yet having the openings proportioned to prevent the child or pet from exiting the vehicle via the window. The material forming the window insert was preferably a plastic, such as a polycarbonate, or acrylic material.

In the second aspect of the invention the window insert is formed from a high impact resistant transparent material. The window insert is easily installed into the window frame and retained by the window itself. The high impact material forming the window insert is preferably a "bullet proof" material, such as a glass composite or glass-plastic composite.

For either of the two alternative aspects of the invention the window insert includes a mounting bracket which slips between and resides between the window and its lower inside weather-stripping. The window insert has an upper protruding edge, either integral, or separately attached, that is inserted into and shares with the window, the upper channel of the window frame. The window insert attaches to the mounting bracket with fasteners. The window insert sits on the inside of the window. At this point the window insert is fully installed and the window can be raised or lowered. The automobile can be driven with the insert in place, whether the window is rolled up or down. The mounting bracket can have different size offsets to allow for different thickness of the bulletproof window, allowing various levels of protection. The offset also allows for airflow between the window insert and the window, and prevents fogging. No attachments or modification of any kind have been made to the door, car windows, or window frames.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

**FIG. 1** is a perspective view of the window insert according to the first aspect of the present invention;

**FIG. 2** is a perspective view of another embodiment of the window insert according to the first aspect of the present invention;

**FIG. 3** is a perspective of an alternate embodiment of the window insert;

**FIG. 4** is an alternative design for the orifices of the window insert;

**FIG. 5** is a perspective view of the window insert according to the second aspect of the present invention;

**FIG. 6** is a perspective view of an alternative embodiment of the window insert according to the second aspect of the present invention;

**FIG. 7** is a section view illustrating the installation of the window insert;

**FIG. 8** is a perspective view of an installed window insert from the outside of the automobile.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

**FIG. 1** depicts a window insert **20** according to a first aspect of the invention. The mounting bracket **21** has a bottom blade **22** sized to be insertable between a standard window **23** of an automobile and the lower inside weatherstripping **24** of the window **23**. The mounting bracket **21** has a plane **25** upon which the window insert **20** rests. The mounting bracket **21** also has two fastening devices **26** which retain the window insert **20** having two fastening device receivers **27**

The window insert **20** has an upper protruding edge **28** sized to be insertable, along with the window **20**, into the upper receiving channel **29** of the window frame of the automobile door. The insert has a notched bottom **30** to rest upon the mounting bracket plane **25** and two fastening device receivers **27** to retain the window insert **20** in the window frame of the automobile door.

Accordingly, it may be appreciated that to install the window insert **20** of the present invention, the window **23** is retracted, the bottom blade **22** of the mounting bracket **21** is inserted between the window **23** and the lower inside weatherstripping **24**. The upper protruding edge **28** of the window insert **20** is inserted into the upper receiving channel **29** of the window frame, and the window insert's notched bottom **30** is rested on the mounting bracket plane **25**. The window insert **20** is then retained in place by engaging the mounting bracket fastening device **26** with the window insert fastening device receiver **27**. At this point, the window **23** may be raised or lowered as desired. It also may be appreciated that at no place has the window, window frame, or automobile door been modified or attached to.

Similarly, **FIG 2** depicts another embodiment of the window insert **20** according to the first aspect of the invention. The window insert **20** has a bottom blade **31** which is sized to be insertable between a standard window **23** of an automobile and the lower inside weatherstripping **24** of the window **23** . The top of the window insert **20** has a receiving edge **32** and fastening devices **33** .

The top mounting bracket **34** has a protruding edge **35** sized to be insertable along with the window **23** into the upper receiving channel **29** of the window frame. The top mounting bracket **34** also has fastening device receivers **36** .

Accordingly, it may be appreciated that to install this embodiment of the window insert **20** of the present invention, the window **23** is retracted. The bottom blade **31** of the window insert **20** is inserted between the window **23** and the lower inside weatherstripping **24** . The top mounting bracket **34** is inserted into the upper receiving channel **29** of the window frame and is rested on the receiving edge **32** of the window insert **20** . The window insert **20** is retained in the window frame by engaging the window insert fastening device **33** and the top mounting bracket fastening device receivers **36** . At this point the window **23** may be raised or lowered as desired and no modification have been made to the car window, window frame, or automobile.

In the first aspect of the present invention, wherein the window insert is used primarily to retain children or pets, it is preferred to include at least one and potentially a plurality of holes or orifices **37** , within the window insert **20** so that airflow can be facilitated. In the most basic embodiment of the invention, the orifices **37** may be simply circular openings cut perpendicular to the plane faces of the window insert, as shown in **FIG 1**.

**FIG 3** is a perspective view of another alternative embodiment for a window insert **38** , and **FIG 4** shows an enlarged perspective view identified by circle **4 — 4** in **FIG 3** . In the design according to **FIGS 3** and **4** , the window insert **38** is formed to define a stepped pocket **39** to accept the top mounting bracket, and a blade **40** at the lower edge to be insertable between the window and the lower inside weatherstripping. In addition the window insert **38** may include orifices **41** having a circumferential ridge **42** , which defines and further strengthens the window

insert 38 . The design of **FIGS 3 and 4** is particularly well suited to manufacture using a vacuum molding technique.

Moreover, for a second aspect of the invention, wherein the window insert is to be used primarily as a high impact resistant bullet proof shield, the window insert would be devoid of orifices as they are illustrated in **FIG 5** . For these applications, the window insert may be manufactured of laminated layers 43 from plastics such as polycarbonate or acrylic or plastic laminates, or glass, or glass-plastic composites.

**FIG 5** illustrates the mounting bracket variation for the bullet proof window insert application. The mounting bracket 44 has an offset mounting plane 45 to accept varying thicknesses of the bullet proof window inserts 46, which provide different levels of protection. The offset mounting plane 45 also enhances air flow around the window insert 46 ,thereby preventing fogging in certain inclement weather conditions.

Ergonomically and aesthetically, it is desirable to have a curved window insert 46 which accomodates the natural contour of the curved glass window of most standard vehicles as **FIG 5** illustrates. However, it maybe less expensive to fabricate window inserts from a flat sheet of glass composite or glass-plastic composite.

**FIG 5** also illustrates one method of forming or manufacturing the window inserts of the present invention. As it may be appreciated, window shapes and sizes vary so greatly from automobile to automobile that the window inserts will be manufactured or formed to provide a custom fit in most applications.

**FIG 6** illustrates another alternative window insert embodiment where as the protruding edge 48 of the window insert 47 is fabricated from a separate material, such as a plastic or a metal, such as aluminum, or steel, is attached to the window insert in some manner, such as a fastener or adhesive. This may provide added strength to the window insert, provide solutions for an unusual application, or aid in manufacturing.